

REMARKS

Pursuant to the Office Action having a mailing date of April 10, 2003, Applicant has amended the present application to put the claims in better condition for allowance. No new matter has been added by this amendment, and support for the amended claims may be found throughout the specification and drawings.

The present invention relates to a process for the treatment of fresh meat wherein the process includes steps for preserving fresh meat. The fresh meat is exposed to an oxygen atmosphere at elevated pressure in order to achieve storage stability. During the supply of oxygen, a temperature is selected such that, and the feed rate is set or controlled to be low enough that, the fresh meat does not freeze. The pressure during the storage is selected to be high enough, and the storage time long enough, so that the fresh meat is completely penetrated by oxygen. During the removal of the oxygen, the removal rate is set or controlled to be low enough that, firstly, the fresh meat does not freeze and, secondly, the oxygen permeating the treated fresh meat is removed from the fresh meat without bubble formation.

35 U.S.C. §102

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Verhaag et al., U.S. Patent No. 5,791,151 issued to Applicant on August 11, 1998. Applicant respectfully traverses. It is appreciated that anticipation requires that a cited reference must disclose every element of the claimed invention.

The '151 patent discloses a method for enhancing storage stability of fresh meat; however, the present invention provides improvements over the method disclosed in the '151 patent. Firstly, in many cases wherein the method disclosed in the '151 patent was used to preserve fresh meats, after the treated meat was re-exposed to the ambient atmosphere it developed gray spots after a relatively short time, and particularly rapidly at the contact

points between two meat pieces. Secondly, the treated meat pieces were in many cases either frozen or swollen in a spongiform manner and beset with bubbles, so that in one case they could no longer be marketed in accordance with the food regulations as fresh meat and in the other case could no longer be marketed at all. It was discovered that simply applying oxygen often resulted in freezing of the fresh meat even when the oxygen atmosphere in the chamber was maintained above the freezing temperature of the meat. This result occurs from the fact that oxygen is stored under high pressure in a compressed state and that by the expansion of oxygen during supplying it to the treatment chamber drastically reduces its temperature and the fresh meat directly impinged by the cold oxygen freezes. As a result, the supplied oxygen does not penetrate the frozen meat and therefore a desired replacement of carbon dioxide with oxygen in the cells of the meat does not take place.

The present invention advantageously realizes that certain process parameters must be controlled in order to ensure that the red color of the fresh meat is reliably maintained over a desired time period. Particularly, it has been found that the feed rate must be set or controlled to be low enough that the fresh meat does not freeze since freezing occurs even if the resulting cooling temperature in the treatment chamber is set above the freezing temperature of fresh meat. Applicant submits that Verhaag et al. does not disclose any hint with respect to controlling the feed rate of the oxygen into the treatment chamber. Verhaag et al. only states that the meat is stored within the chamber at a well-cooled state but does not take into account that during the expansion of the supplied oxygen the temperature of the oxygen decreases temporarily resulting in freezing of the meat.

Accordingly, Applicant submits that Verhaag et al. does not disclose setting or controlling a feed rate of oxygen to be low enough that the fresh meat does not freeze as

according to the claimed invention. As such, Applicant respectfully requests that this be withdrawn as a basis for rejection.

Claims 14-17 are rejected under 35 U.S.C. §102(b) as being anticipated by Verhaag et al. Applicant submits that claims 14-17 are dependent from claim 1, which is believed to be in condition for allowance. Applicant reiterates the foregoing remarks with regard to claim 1 and the cited reference and respectfully requests reconsideration of claims 14-17 in view thereof. As claims 14-17 depend from claim 1, which is believed to be in condition for allowance, they too are believed to be in condition for allowance.

35 U.S.C. §103

Claims 1-12 are rejected under 35 U.S.C. §103 as being unpatentable over Verhaag et al. in view of Follett, U.S. Patent No. 3,922,358. It is appreciated that obviousness requires that the cited references teach or suggest every element of the claimed invention as a whole.

Follett teaches a process for the treatment of raw meat comprising subjecting freshly cut pieces of meat to an oxygen-containing gas mixture under pressure at a temperature between the freezing point of the meat and the temperature at which the meat is adversely affected by increased temperature. Follett also discloses that decompression should be controlled in order to prevent freezing of the meat; however, Follett does not teach or suggest that the removal rate of oxygen must be controlled in order to prevent bubble formation as according to the present invention.

The claimed invention requires that the fresh meat must be completely penetrated by oxygen to its core in order for storage stability to be maintained as desired. If only a minimal region of the treated meat is not penetrated by the oxygen, after treatment and removal of the pressure acting on the meat, the carbon dioxide present in the untreated region can extend to all of the remaining regions of the treated fresh meat. In this case, the carbon dioxide

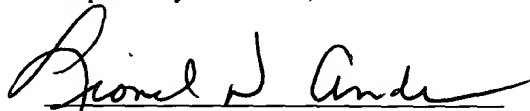
penetrates the outside of the treated meat in a relatively short time and green spots are formed thereon due to oxidation. .

Additionally, Applicant's invention takes notice that if the removal rate of oxygen is set too high, freezing of the fresh meat can occur. The present invention realizes that it is not enough to control the removal rate of oxygen such that no freezing occurs but that if insufficient time is given to the oxygen which is present at a high pressure in each cell of the treated fresh meat to diffuse out of the meat into the ambient atmosphere, the meat will present an expanded spongy consistency, in addition to bubble formation on the surface of the meat due to over exposure.

Applicant submits that neither of the cited references teaches or suggests that the treated meat must be completely penetrated by oxygen in order to obtain the desired storage stability or that the removal rate of oxygen from the treatment chamber must be controlled in order to prevent bubble formation on the surface of the meat.

With regard to the above claim limitations, Applicant submits that the present invention is not anticipated or obvious in view of the cited references. Applicant respectfully requests reconsideration of the claims in view of the foregoing amendments and remarks. The claims as amended are now believed to embody allowable subject matter and as such it is respectfully requested that such action be taken.

Respectfully submitted,



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